

PATENT SPECIFICATION

630,494



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COMPLETE SPECIFICATION

Improvements in or relating to Garbage Grinders

We, EUREKA WILLIAMS CORPORATION, a Corporation organized under the laws of the State of Michigan, United States of America, of 6060, Hamilton Avenue, City of Detroit, State of Michigan, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to garbage grinders.

In accordance with the present invention, the improved garbage grinder comprises a chamber provided with an outlet and having cutting surfaces disposed around the periphery of said chamber at the outlet end thereof, rotary impeller means operable to impel material in said chamber against said cutting surfaces, and additional cutting surfaces projecting inwardly of the aforesaid cutting surfaces, said impeller means being notched to accommodate said additional cutting surfaces.

The improved garbage grinder also comprises a chamber having a bottom wall, teeth disposed around the periphery of said wall, means providing a discharge outlet from said chamber, rotary impeller means arranged to sweep material on said wall against said teeth for reducing such material and to project reduced material through said outlet, and tooth means extending inwardly of the aforesaid teeth, said impeller means being notched to accommodate said inwardly extending teeth.

The improved garbage grinder furthermore comprises a chamber having a bottom wall, a ring extending upwardly from said wall around the periphery thereof, said ring being provided with slots and teeth, rotary impeller means arranged to sweep material on said wall against said teeth for reducing such material and to project reduced material through said slots, said ring having teeth extending inwardly from the aforesaid teeth, said impeller means being notched to accom-

modate said inwardly extending teeth, said impeller means also being provided adjacent the outer end thereof with teeth arranged normal to said notches.

Principal objects of the invention are to provide:

A new and improved garbage grinder;

A garbage grinder in which means are provided for more efficiently reducing certain types of food waste material that are difficult to handle, such as citrus rinds, gristle, and some forms of bones.

In the accompanying drawings, which show a preferred form of the invention by way of example:

Fig. 1 is a fragmentary vertical sectional view of a garbage grinder embodying the invention;

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 4;

Fig. 3 is an enlarged fragmentary plan view of part of the stationary teeth;

Fig. 4 is a horizontal sectional view taken generally along the line 4—4 of Fig. 1, but with certain parts shown in section;

Fig. 5 is a sectional view through one of the hammers taken along the line 5—5 of Fig. 4; and

Fig. 6 is an enlarged fragmentary elevational view of the stationary shredder ring.

As illustrated the device is adapted to be attached to the drain outlet of a sink for receiving garbage to be reduced and water which is useful in helping to reduce garbage and to flush away the reduced material. The outlet from the sink forms an inlet to a chamber 12 which is circular in cross section. The chamber 12 is defined by suitable casing members 14, 16 and 18 suitably connected together, the transverse wall at the upper end of the member 18 forming the bottom wall 20 of the chamber 12. The members 16 and 18 are also formed to provide an annular trough 22 from which leads a discharge pipe 24 which is adapted to be connected to a sewage waste disposal system.

The casing 12 at its bottom is formed in

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part by a cylindrical shredder ring 26 which surrounds the outer periphery of the bottom wall 20 and projects upwardly therefrom, the ring 26 being clamped in position by and between suitable surfaces provided on the casing members 16 and 18. The ring 26 divides the lower end of the chamber 12 from the trough 22. The ring 26 is provided with a series of relatively small openings or slots 28 at the level of the bottom wall 20 of the chamber 12 and which openings 28 collectively form an outlet for reduced material from the chamber 12, permitting the discharge of such reduced material into the trough 22.

The openings 28 are relatively small and are spaced from each other and extend completely around the bottom of the chamber 12. The size of each of the openings 28 determines the size of the material which is discharged into the trough 22.

The shredder ring 26 is also formed to provide a series of vertically extending teeth 30 around the bottom of the casing 12, there being one tooth at the trailing end of each of the openings 28. Each tooth 30 preferably projects upwardly materially beyond the upper end of the openings 28.

The ring 26 is also formed to provide a number of inwardly extending teeth 32 which may be formed by inwardly deflecting the cutting edge of a tooth 30. The teeth 32 may thus comprise somewhat circular cutting edges which project radially inwardly beyond the cutting edges of the teeth 30. We have illustrated four teeth 32, two of which are spaced 180° apart and arranged adjacent the upper ends of the teeth 30, while two are spaced 90° from each of the aforesaid teeth and disposed in a lower plane but above the openings 28.

Means are provided for impelling material against the teeth 30 and 32 for reducing such material and for impelling reduced material outwardly through the slots or openings 28, and such means comprise a pair of hammers 34, each of which is pivoted on a vertical axis at 36 to the arms 38 of a hub 40 fixed for rotation to the shaft 42 of an electric motor 44.

The motor 44 is fixed relative to the casing member 18. The shaft 42 projects through an opening into the wall 20 and thereabove. A seal 46 is provided between the opening in the wall 20 and the shaft 42 so as to prevent the escape of liquid and other materials from the chamber 12 and around the shaft 42. The arms 38 are provided with pins 37 which project into suitable bearings at the inner ends of the hammers 34 and form a pivot for the hammers so as to permit them to swing

in a plane normal to the axis 36.

The hammers 34 and the hub 40 are constructed and arranged relative to each other so that the hammers may swing through an arc of approximately 180° relative to their pivot; that is, from their full line position as shown in Fig. 4 to the dotted line position. The outer ends of each of the hammers are notched as indicated at 50 so as to accommodate the teeth 32, the notches 50 indicating the relative position of the upper and lower teeth 32 on the ring 26.

In addition the forward edges of the hammers 34 at their outer ends thereof are provided with serrations or teeth 52 which are vertically arranged, these teeth 52 functioning to engage material with which the hammers come in contact during rotation of the impelling means.

The hammers 34 and the hub 40 rotate about the axis of the shaft 42, the hammers 34 functioning as impellers to project material on the bottom wall of the chamber 12 against the teeth and through the openings 28. The pivotal mounting of the hammers 34 on the hub 40 permits the hammers 34 to yield or swing backwardly in the event that their path of movement is obstructed. The hub 40 may be driven at a speed of approximately 1700 r.p.m. and in the direction indicated by the arrow in Fig. 4. The centrifugal force of the mass of the hammers 34 will tend to maintain them in their extended position as illustrated in full line so as to impel material on the bottom wall 20 of the chamber against the teeth 30 and 32.

The teeth 52 on the hammers enable the hammers to engage and hold material, which, because of the nature of it, might tend to slide over the top of the hammers 34, and to press such material against teeth 30 and 32 during rotation of the hammers. The inwardly projecting teeth 32 will function to prevent certain types of material, such as citrus rind, gristle and certain forms of bones, from riding around on the bottom of the chamber ahead of the hammers without being acted on by the teeth 30. That is, the teeth 32 will cooperate with the ends of the hammers 34 to act on material and help to expedite reduction thereof.

Each of the hammers 34 may include an upwardly projecting step cutter 60 which faces in the direction of rotation of the hammers and helps to break up material which might be disposed above the plane of the hammers 34. The cutters 60 will also function to prevent material from jamming in the chamber 12 above the hammers 34.

In our prior specification No. 604,516 published after the filing of the present 130

specification a garbage reducing apparatus for attachment to a sink is described and claimed comprising a garbage receiving chamber provided at its discharge end
 5 with cutting teeth and a discharge outlet for reduced material, power driven rotary means for impelling material against said teeth, said rotary means comprising a hub and a hammer pivotally connected to said
 10 hub, said hammer projecting outwardly of said hub so that the outer end of said hammer may yield in a direction opposite that in which it is driven in the event its path of movement is obstructed during
 15 operation of said rotary means, and said hammer in its extended position extending close to the cutting teeth without engaging the same.

Having now particularly described and
 20 ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is :—

1. A garbage grinder including a cham-
 25 ber provided with an outlet and having cutting surfaces disposed around the periphery of said chamber at the outlet end thereof, rotary impeller means operable to impel material in said chamber against
 30 said cutting surfaces, and additional cutting surfaces projecting inwardly of the aforesaid cutting surfaces, said impeller means being notched to accommodate said
 additional cutting surfaces.

35 2. A garbage grinder according to claim 1 wherein said additional cutting surfaces are arranged in staggered relationship.

3. A garbage grinder including a cham-
 40 ber having a bottom wall, teeth disposed around the periphery of said wall, means providing a discharge outlet from said chamber, rotary impeller means arranged to sweep material on said wall against said
 45 teeth for reducing such material and to

project reduced material through said outlet, and tooth means extending inwardly of the aforesaid teeth, said impeller means being notched to accommodate said
 50 inwardly extending teeth.

4. A garbage grinder according to claim 3 wherein the outer ends of said impeller means are provided with teeth.

5. A garbage grinder including a chamber having a bottom wall, a ring extending
 55 upwardly from said wall around the periphery thereof, said ring being provided with slots and teeth, rotary impeller means arranged to sweep material on said wall against said teeth for reducing such
 60 material and to project reduced material through said slots, said ring having teeth extending inwardly from the aforesaid teeth, said impeller means being notched to accommodate said inwardly extending
 65 teeth, said impeller means also being provided adjacent the outer end thereof with teeth arranged normal to said notches.

6. A garbage grinder according to claim 5 wherein said first mentioned teeth
 70 extend vertically.

7. A garbage grinder according to claim 5 wherein said impeller is provided adjacent the outer end thereof with
 75 serrations.

8. A garbage grinder constructed and adapted to operate substantially as herein described with reference to Figures 1 to 6 inclusive, of the accompanying drawings.

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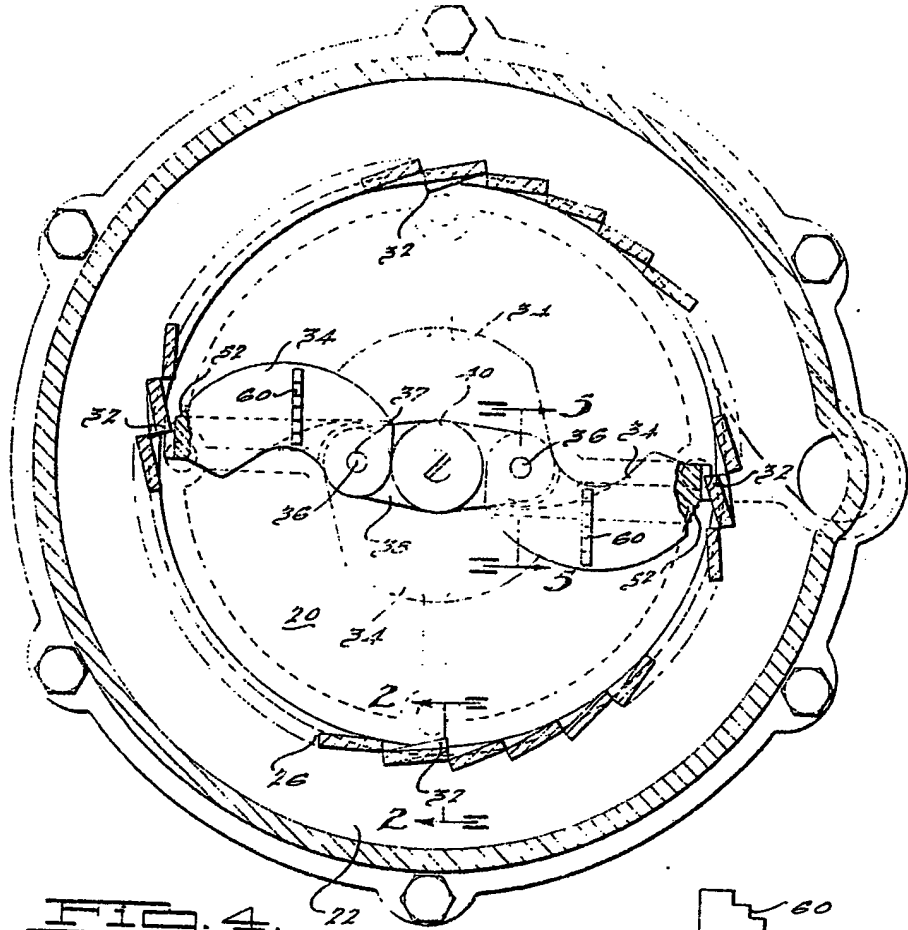
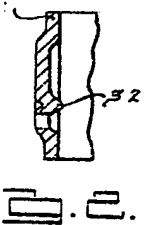
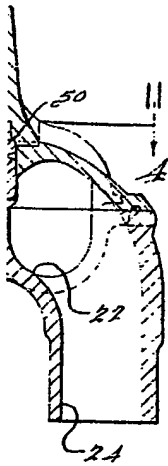


FIG. 4.

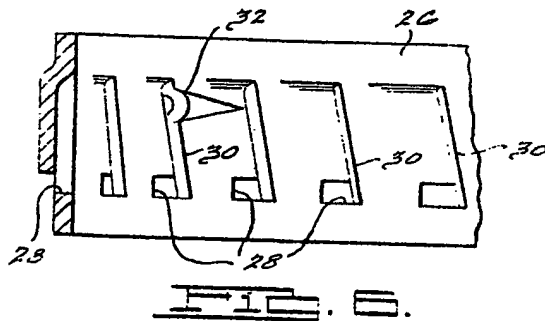


FIG. 5.

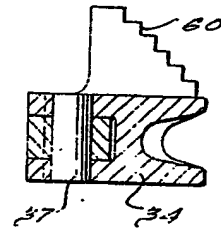
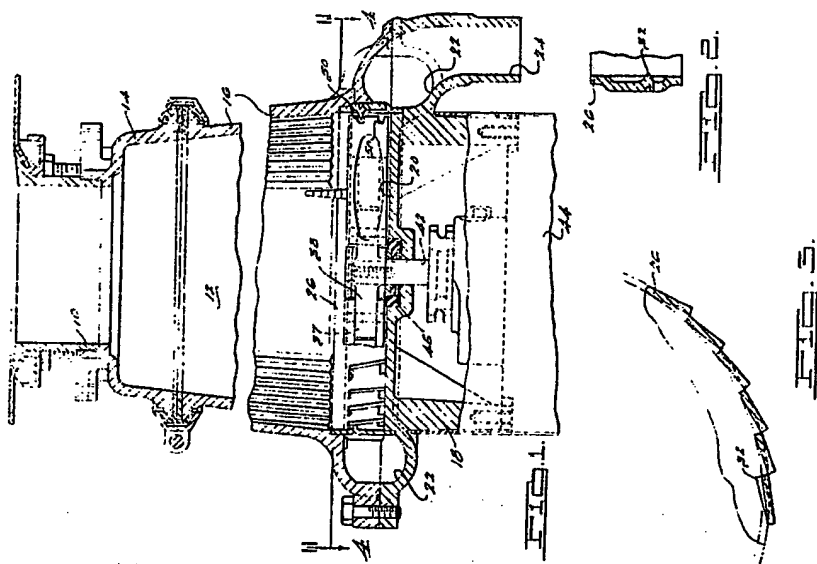


FIG. 6.



[This Drawing is a reproduction of the Original on a reduced scale.]